

REPORT OF THREE CASES OF GANGRENOUS  
HERNIA SUBJECTED TO CIRCULAR  
ENTERORRHAPHY.<sup>1</sup>

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WHEN a loop of the small intestine has become gangrenous from strangulation in a hernial sac, what plan of treatment shall be adopted? Is it safer to form an artificial anus or to do a resection and immediate suture? If an anus be formed, a secondary operation, and one attended by considerable danger, will be necessary, provided death from inanition does not ensue before the opening can be closed. Immediate enterorrhaphy, on the other hand, is unattended by either of these dangers, but the operation in itself must necessarily be lengthy and serious, and in many cases its performance will be impossible on account of the desperate condition of the patient.

In reporting a case a few years ago, I collected 115 cases of immediate enterorrhaphy, and found the mortality to be about 50 per cent. In spite of this large death-rate, my own preference in the majority of cases is for immediate suture, instead of the formation of a temporary artificial anus.

The three cases reported comprise my entire experience, and the satisfactory results obtained have no doubt largely influenced me to favor the immediate closure of the intestinal canal whenever the patient's condition does not contraindicate this procedure.

For the purpose of uniting with safety and rapidity the divided ends of intestine, many ingenious devices have in recent years been introduced. It seemed for a time as if some of them might replace the old method of end to end suture. They have

<sup>1</sup> Cases reported at the New York Surgical Society, February 28, 1894.

not, however, stood the test of time, and most of the rings and plates have had their day. In exceptional cases they may still be useful, but I feel that under ordinary circumstances there is no need of them. It has always seemed to me that the union of the divided ends of the small intestine could be best accomplished by sutures alone without the aid either of lateral anastomosis or of rings. I have always adopted this method, and the results have not made me regret the omission of artificial aids. In the three cases reported, union has been perfect, and no contraction of the intestinal calibre has followed. In one case nearly six years have elapsed since operation, and the patient has regular, well-formed, faecal evacuations. In another, three years have elapsed without any sign of constriction. It may be too soon to judge of the third case, but thus far he has no sign of obstruction or even of constipation. One of these cases has already been reported,<sup>1</sup> and I shall only briefly refer to it:

CASE I.—Male, aged twenty-five years; had always been a strong, healthy youth. For four years a right inguinal hernia had existed, for which he had worn a truss. He was admitted to the Presbyterian Hospital on the evening of December 29, 1893. Three days previously he had failed to wear his truss, and the hernia had at once bulged down into the scrotum, and became irreducible and painful. An attempt was made to reduce it by taxis, but it was unsuccessful. On the next day the tumor became more tense and painful, and he began to vomit. On the morning of December 29 the vomiting became stercoraceous, and another unsuccessful attempt was made by his physician to reduce the hernia, the patient being under the influence of ether for nearly an hour. The stercoraceous vomiting continued, the temperature became subnormal, and the pulse was very weak and rapid. On his admission to the hospital, he was almost in collapse, and his vomiting, stercoraceous in character, was almost constant. I first saw the man at 10 P.M., and decided on immediate operation. In the right side of the scrotum running up to the inguinal opening was a tense tumor, without impulse on cough, as large as a cocoanut. Chloroform was administered and an incision made down to the sac, which was distended with a blackish fluid. On opening the sac, dark blood, partly fluid and partly clotted, to the

<sup>1</sup> New York Medical Journal, March 16, 1889.

amount of about  $\frac{5}{8}$  x, gushed out. In the sac was seen a loop of small intestine, about seven inches long, of a dull brown color without gloss, and on its wall were two or three blackish spots. The mesentery of this loop was distended by a solid mass of semiclotting blood as large as the adult fist. It was partly this clot, situated between the layers of the mesentery, and partly the constriction in the inguinal canal which had cut off the blood-supply from the intestine, and the result was partial gangrene. The incision was carried upward, and the abdominal cavity freely opened. I decided to excise the gangrenous loop and at once suture the intestinal ends together. The patient's condition seemed to warrant such a procedure. The intestine appeared healthy at points three inches beyond the furrow caused by the constriction. A narrow strip of iodoform gauze was passed through the mesentery and tied, thus occluding the calibre of the gut. About twelve inches of intestine were then excised, the proximal ends being held by an assistant. A portion of mesentery, including the space in which was the hæmatoma, was also excised. The bleeding was controlled by artery clamps, and was not excessive. The ends of the gut being approximated by my assistant, they were united by three rows of sutures. The sutures of very fine silk were interrupted and were threaded in an ordinary round cambric needle. The first row passed through mucous membrane alone; the second through all the coats; and the third were Lembert sutures through the serous coat alone. A few sutures united the gap in the mesentery. No ligatures were used. The intestine was washed and returned. The upper part of the abdominal wound was sutured, the lower part was left open, and a narrow strip of iodoform gauze passed into the peritoneal cavity. The sac was left *in situ*, and was packed with gauze. The operation lasted about an hour and a half. At its end the patient was in collapse, but soon rallied. The vomiting ceased at the end of ten hours. For forty-eight hours nothing was given by stomach, but rectal enemata were administered regularly and retained. On the fourth day he was given beef extract, and on the fifth milk by the stomach. The bowels moved on the sixth day. On the eighth day the gauze was removed. It was perfectly sweet, and there was no sign of leakage. The wound was repacked with gauze, which, however, did not enter the abdominal cavity. On the eighteenth day the patient was etherized, and a secondary suture of the lower part of the abdominal and the scrotal wounds was performed, and union resulted. The patient was out of bed on January

25, and was discharged cured on February 9, with a wound perfectly united, and while the cicatrix does not appear very firm, there is no sign of hernia. The patient is well, complains of no pain, and he has regular, well-formed, fecal movements.

CASE II.—Mrs. L., aged forty-three; had been operated on by me in 1889 for tubercular peritonitis. Laparotomy was performed, and apparently a cure had resulted without any tendency to hernia through the cicatrix.

December 12, 1891. I was summoned by Dr. Paine to see the patient and to operate upon a strangulated hernia. The presence of a right inguinal hernia had not been suspected until three days previous to my visit, when she began to vomit and to complain of pain in a lump situated in the right groin. Her bowels had not moved for five days; the vomiting had continued for three days and for the preceding twelve hours had been stercoraceous. The patient was in rather a desperate state, pulse 120, and very feeble; temperature 98° F. Skin cold and clammy, and mental state very stupid. In the right inguinal region was a boggy red swelling which had more the appearance of an abscess than of hernia. Immediate operation was demanded, and I deemed it unwise to wait for further assistance or preparation, and therefore the operation was begun and completed with the aid of Dr. Paine and a trained nurse. It was considered safest not to administer an anæsthetic. The patient was so stupid from morphine and sepsis that she made but little resistance.

Cocaine was injected and an incision was made into the mass, from which escaped a considerable amount of foul pus and exposed a black hernial sac. On opening this, several ounces of blackish, stinking fluid and gas poured out, and in the sac was seen a loop of small intestine, perhaps eight inches in length, of a dark-brown color entirely without lustre. In it was a small opening through which gas had already escaped. The entire loop was so rotten that gentle manipulation tore a large rent in its wall. It was a question whether immediate resection and suture or a temporary anus would be the surest course. So far the patient had lost no ground during the operation, which had consumed but a few minutes. I decided therefore to freely open the abdomen, and if healthy intestine were found near the gangrenous loop to perform immediate suture. The gangrenous intestine was carefully drawn a considerable distance outside the abdominal cavity after carefully dividing the stricture in the inguinal canal. A large amount of gas and fluid poured out. From

the appearance of the intestinal contents, it was evident that the opening was in the beginning of the ileum, a strong argument in favor of enterorrhaphy. The gangrenous loop was wrapped in a wet bichloride towel, and the abdominal opening enlarged so as to admit two fingers and permit free inspection of the cavity. At points about four inches beyond the deep furrows caused by the constriction, the gut seemed to be healthy, and it was here divided so that about fourteen inches of intestine were removed with a small portion of mesentery. There was but little hæmorrhage, which was controlled by a few clamps. The cut ends of the intestine were then approximated and united by two rows of interrupted silk sutures, threaded in ordinary round cambric needles. The first row passed through all the coats of intestine. The outer row consisted of Lembert sutures passed through the serous coat alone. A few sutures united the mesentery. The intestine was washed off with hot bichloride solution and returned into the abdominal cavity. The abdominal wound was partially closed, the lower half being left open, sutures having been inserted on each side, but not tied. The sac was left undisturbed and packed with bichloride gauze. The operation lasted fifty-five minutes. In spite of free stimulation with hypodermic injections of digitalis and whiskey the patient, when removed off the table, was in a state of collapse, pulse 160. During the following twelve hours her condition was critical. Her vomiting, however, gradually ceased, and at the end of ten hours she was able to retain whiskey by the mouth. On the third day she was given beef extract, and on the fourth peptonized milk. Her bowels moved on the fourth day.

Temperature on the second day rose to 103° F., but soon fell below 100° F. The wound was dressed on the fifth day and found to be somewhat septic. It was repacked with iodoform gauze after irrigation. On the tenth day it was redressed and found to be healthy. The sutures inserted into the lower half of the abdominal opening were then drawn together, closing the peritoneal cavity. There resulted a perfectly solid union with no return of the hernia. The patient's convalescence was slow and she was not out of bed till the fifth week. She is now a healthy-looking woman and, in spite of the two abdominal scars, is able to do heavy house-work. She suffers no more from constipation than she did before the operation, and the fecal movements are large and well formed. When the interior of the abdomen was inspected by touch and by sight, it was both interesting and gratifying to discover that not the slightest trace of the

tubercular peritonitis remained. Two years before the entire peritoneum, both visceral and parietal, was roughened, and masses, probably enlarged glands, were present along each side of the spinal column, varying in size from a pea to a hickory-nut, and in the pelvis was a mass as large as a walnut. These had entirely disappeared.

CASE III.—Female,<sup>1</sup> aged sixty-six, Strangulation had existed for forty-eight hours. The patient was in fair condition. The operation was done June 5, 1888. The sac contained foul-smelling fluid. A loop of intestine, three inches long, was gangrenous. The gut was drawn outside the abdomen and divided at points where it appeared healthy. The intestine was occluded by the fingers of an assistant, and the ends approximated. No constricting ligatures or clamps were used. The ends were united by two complete and one partial row of sutures. The inner consisting of interrupted silk sutures passed through the mucous membrane alone. The middle consisted of Lembert sutures of catgut passed through the serous and muscular coats. The outer, which was partial, consisted of Lembert sutures. The intestine was returned, the sac extirpated, and the wound sutured. Time of operation, eighty minutes. For forty-eight hours no food was given, on the third day beef extract, and on the fourth day milk was allowed. On the fifth day the bowels moved. The patient left the hospital at the end of four and a half weeks. She has been well ever since. In spite of her seventy-two years, she is still active. She experiences no trouble with her bowels. The movements are large and well formed. She has no pain and no return of the hernia.

The plan of suture in these three cases has been similar. In two of the cases three rows and in one patient two rows have been employed. The result has been the same, and, in future, I should feel inclined to omit the separate suture of the mucous membrane and rely on two rows, the inner through all the coats, and the outer (Lembert) through the serous coat alone. The sutures have always been interrupted. Intestinal clamps have not been employed, as the fingers of an assistant answer every purpose. The patients were nourished entirely by the rectum during the four or five days following the operation, and they gained strength rapidly under this form of alimentation.

<sup>1</sup> New York Medical Journal, March 16, 1889.